

TAXONOMIC STUDIES ON *MERISMOMORPHA* WITH THE DESCRIPTION OF THREE NEW SPECIES FROM INDIA (HYMENOPTERA : CHALCIDOIDEA : PTEROMALIDAE)

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INTRODUCTION

The genus *Merismomorpha* is Indo-Australian in distribution and represented by 11 species from Australia and one undescribed species from India (Boucek, 1988). According to Boucek (1988) the genus is an intriguing cluster of species and some of them seem rather aberrant. He has provided an account on the diagnostic characters of the genus and its affinities with other related genera. In this paper 3 new species of *Merismomorpha* are described from India. For the present study I have examined the type of the genus, *M. acutiventris* Girault and two undescribed species of *Merismomorpha* in QM determined by Boucek. Based upon the study, a revised account on the diagnostic characters of the genus is provided. A key to Indian species of *Merismomorpha* is also provided.

The type specimens of the new species described here are deposited in Zoological Survey of India, Western Ghats Field Research Station, Calicut, India.

The morphological terminology used in this paper follows that of Boucek (1988) and Boucek & Rasplus (1991). The following abbreviations are used in the text : F1-F5 - funicular segments 1 to 5; MV - marginal vein; OOL - ocellocular distance; PMV - postmarginal vein; POL - postocellar distance; SMV - submarginal vein; STV - stigmal vein; T1-T5 - gastral tergites 1 to 5; QM - Queensland Museum, Brisbane, Australia.

Genus *Merismomorpha* Girault

- 1913 : 82-83. *Merismomorpha* Girault. Type species *M. acutiventris* Girault, by original designation. Description repeated by Girault, 1913b : 321. (Examined).
- 1915 : 335. *Epipolycystus* Girault. Type species *E. asilus* Girault, by original designation. Synonymy by Boucek, 1988 : 461.
- 1915 : 336. *Neopolycystella* Girault. Type species *N. sicarius* Girault, by original designation, synonymy by Boucek, 1988 : 461.
- 1913 : 440 : 4. *Giorgonia* Girault. Type species *Giorgonia flavipetiole* Girault by monotypy. Synonymy by Boucek, 1988 : 461.

The genus belongs to the subfamily pteromalinae and can be distinguished by the following combination of characters *Head* : little wider than mesosoma, finely to moderately reticulate; lower face often convex along the median line, the convexity continuing down to the apex of clypeus; occiput immargined; clypeal area finely striate, lower margin produced and often rounded-subconical, but in some species apex angulate, blunted or truncate or even slightly emarginate. Gena posteriorly with a fine carina. Malar sulcus finely indicated. Antennae inserted above middle of face, in female with 3 anelli and 5 funicular segments; flagellum slightly to obviously clavate, clava only slightly enlarged. Male flagellum with 2 transverse anelli and 6 funicular segments.

Mesosoma arched in profile, finely to moderately reticulate. Pronotum less wider than mesoscutum, collar anteriorly not carinate. Mesoscutum with notauli complete or incomplete. Scutellum without frenal line indicated, except in one case. Propodeum with nucha distinct, though sometimes short and with converging submedian channels; spiracles small, oval; postspiracular sulcus distinct; supracoxal flange narrow. Prepectus distinctly longer than tegula, reticulate. Upper mesepimeron shiny, separated by a transverse fovea from lower mesepimeron. Forewing with basal part almost bare; marginal fringe present; MV longer than PMV. Legs slender; hind tibia with one spur.

Gaster : ovate, lanceolate; petiole always long and more or less sinuate, at apex embraced from below by the thin and narrow extension of the first gastral sternite; T3 mostly enlarged and convex, the shorter T2 has a median notch on hind margin; sometimes T1 also has such a notch or short incision.

Merismomorpha closely resembles *Lomonosofiella* Girault and according to Boucek (1988) the latter might be only a species group of *Merismomorpha* and eventually be synonymised under it. *Lomonosofiella* has been maintained valid by him mainly on the differences of antenna, scutellum and supported by petiolar characters. *Lomonosofiella* has flagellum with 2 anelli and 6 funicular segments, scutellum with frenal line indicated by a row of deeper punctures and the frenal area has the reticulation shallower, and petiole always very long, slightly sinuate, in dorsal view thickened before middle and with very evident reticulation. Boucek (1988) mentioned that *M. flavipetiole* (Girault) has the frenal groove indicated.

In *M. minuta* sp. nov. and *M. truncata* sp. nov. the reticulation is shallower on frenal area than the rest of the scutellum and the petiole is widened in the middle (Figs. 1, 12). On the contrary, in *M. elongata* sp. nov. the petiole is long and widened before middle (Fig. 7) and the reticulation on the frenal area moderate. Considering the above I have the opinion that the characters that can be considered valid for the genus *Lomonosofiella* are the flagellum with 2 anelli and 6 funicular segments and evident reticulation on petiole.

Key to the Indian species of *Merismomorpha*, females

1. Forewing (Fig. 11) with PMV only slightly shorter than MV (0.9x); basal hairline indicated; antennae with scape reaching to upper margin of median ocellus; propodeum (Fig. 10) with median carina..... *M. elongata* sp. nov.

- PMV distinctly shorter than MV (0.5-0.7x) (Figs. 3, 14); basal hairline not indicated; scape hardly reaching lower margin of median ocellus; propodeum (Figs. 4, 15) without median carina 2
- 2. Lower margin of clypeus truncate (Fig. 13); lower face not evidently convex along the median line; petiole as long as hind coxa, embraced below by a very short extension of first gastral sternite (Fig. 12); exposed part of T3 slightly longer than T4; hind margin of T1 & T2 without median incision; propodeum (Fig. 15) with basal deep and broad *M. truncata*, sp.nov.
- Lower margin of clypeus angulate (Fig. 9); lower face distinctly convex along the median line; petiole distinctly shorter than hind coxa (Fig. 1) embraced by a longer extension of gastral sternite; exposed part of T3 distinctly longer than T4; hind margin of T1 & T2 incised in the middle; propodeum (Fig. 4) with basal fovea not broad and deep as above
..... *M. minuta* sp. nov.

1. *Merismomorpha minuta*, sp. nov.

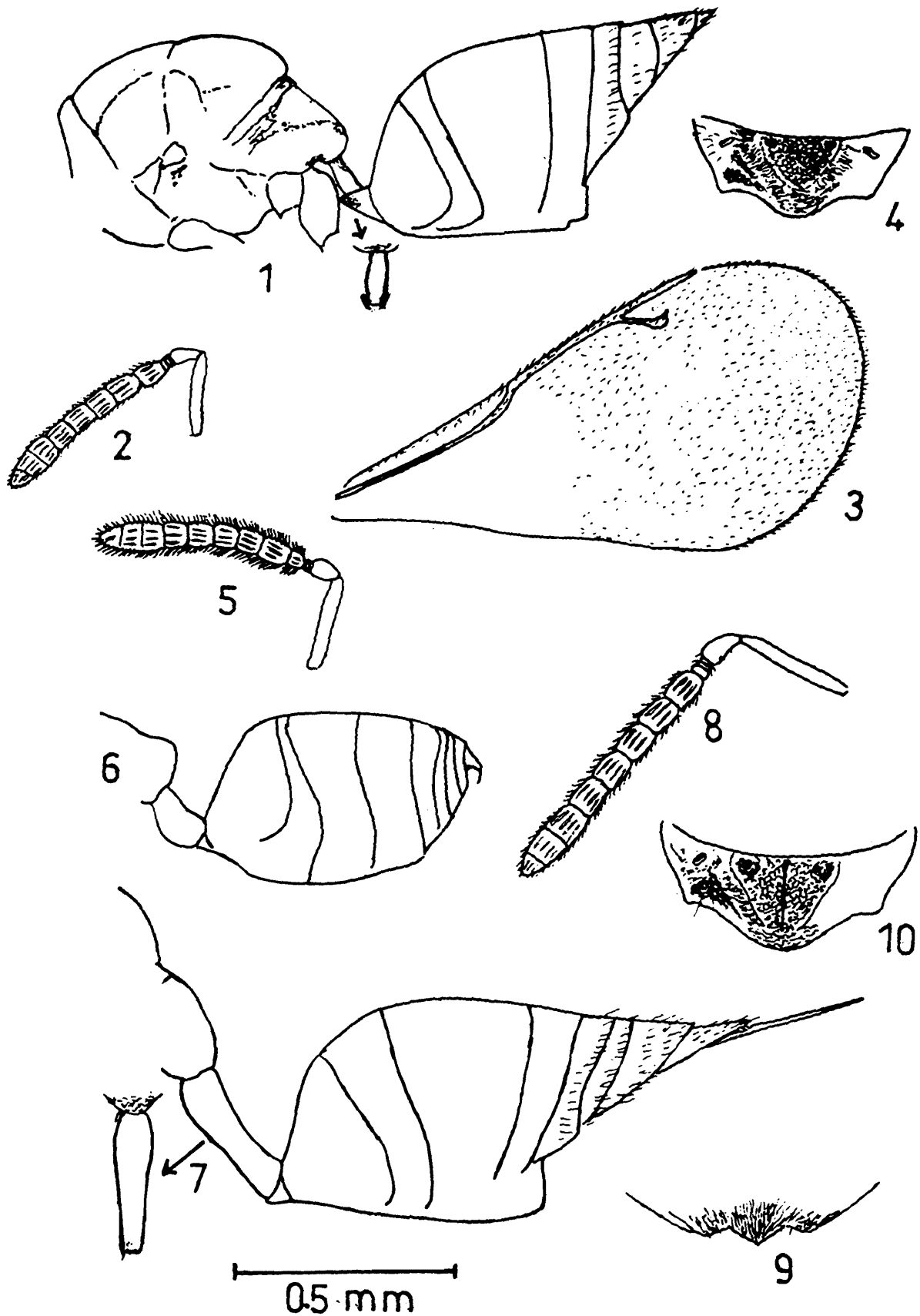
(Figs. 1-6)

Female : Length 1.5 - 2.1mm (Holotype 1.8mm). Head and mesosoma bluish black; gaster mostly metallic bluish black except T1 and ventral part of gaster dark brown. Antennae brown with scape pale. Coxae and femora brown, remaining parts of legs testaceous. Tegulae brown; wings hyaline; veins pale brown.

Head : 1.2x as broad as mesosoma; finely reticulate, almost shiny on the median convex line of lower face; pubescence very small. In dorsal view head width 2.1x length and in front view width 1.2x height; temple length 0.5x eye length; POL 1.3x OOl; lower margin of clypeus angulate; malar space length 0.5x eye height; eyes separated by 1.4x their height; eye height 1.5x width; malar sulcus indistinct. Antennae (Fig. 2) inserted only little above middle of face; toruli very slightly above anterior margin of clypeus than to upper margin of head (12 : 11); scape slender, hardly reaching lower margin of median ocellus, length 0.7x eye height; length of pedicel plus flagellum 0.8x head width; pedicel as long as F1; third anellus little longer than others; all funicular segments little longer than wide; clava as long as 2.5 preceding segments combined.

Mesosoma : (Fig. 1) length 1.3x width; pubescence very small; pronotal collar finely reticulate. Mesoscutum width 2.2x length, mid lobe finely reticulate, lateral lobes very finely reticulate; notauli almost complete. Scutellum similarly sculptured as mid lobe of mesoscutum, reticulation shallower on frenal area; frenal line not indicated; scutellum medially little longer than mesoscutum (9.5 : 8.5). Propodeum medially 0.6x as long as scutellum; median area moderately reticulate ; median carina absent; submedian channels moderately deep. Forewing (Fig. 3) length 2.1x width; pubescence moderately dense; basal hairline not indicated; PMV distinctly shorter than MV (0.65x). Relative lengths : SMV 15, MV 10, PMV 6.5, STV 3.5.

Gaster : (Fig. 1) short, ovate; petiole short, length 2.3x width in profile, widened medially, embraced by a long extension of first gastral sternite below; gaster (excluding petiole) slightly longer than head plus mesosoma and 2.3x as long as hind tibia; hind margin of T1 & T2 incised in the middle; T3 medially 2.6x T4.



Figs. 1-10, 1-6. *Merismomorpha minuta*, sp. nov. Female : 1, body without head in profile (petiole also in dorsal view); 2, antenna; 3, forewing; 4, propodeum in dorsal view; 5, male antenna; 6, male gaster in profile. 7-10, *Merismomorpha elongata* sp. nov. Female : 7, gaster in profile (petiole also in dorsal view); 8, antenna; 9, lower margin of clypeus; 10, propodeum in dorsal view.

Male : (Figs. 5,6) length 1.6mm. Resembles female but differs in having antenna with 2 anelli and 6 funicular segments, F1 short and anelliform, flagellum with dense pubescence; gaster short and compressed and petiole with very short extension of first gastral sternite.

Holotype Female : INDIA Kerala, Palghat district, Malampuzha, 15.i.1986, Coll. P. M. Sureshan.

Paratypes : 9 Female, 1 Male, data same as that of holotype; 2 Female, Kerala, Malappuram district, Calicut University Campus, v.1998; 1 Female, Kerala, Wynad district, Tirunelli, 1.iii.1994, Coll. P. M. Sureshan.

Remarks : This species closely resembles *M. acutiventris* Girault in the nature of antenna, clypeus, gaster and general sculpture of the body but differs in having petiole distinctly shorter than hind coxa, embraced below by a long extension of first gastral sternite, forewing with short PMV and without basal hairline indicated; notauli almost complete and groove like (in *acutiventris* petiole long, slightly longer than hind coxa, appears two segmented with a short extension of gastral sternite; forewing with PMV long, only little shorter than MV, basal hairline indicated and notauli incomplete and shallow).

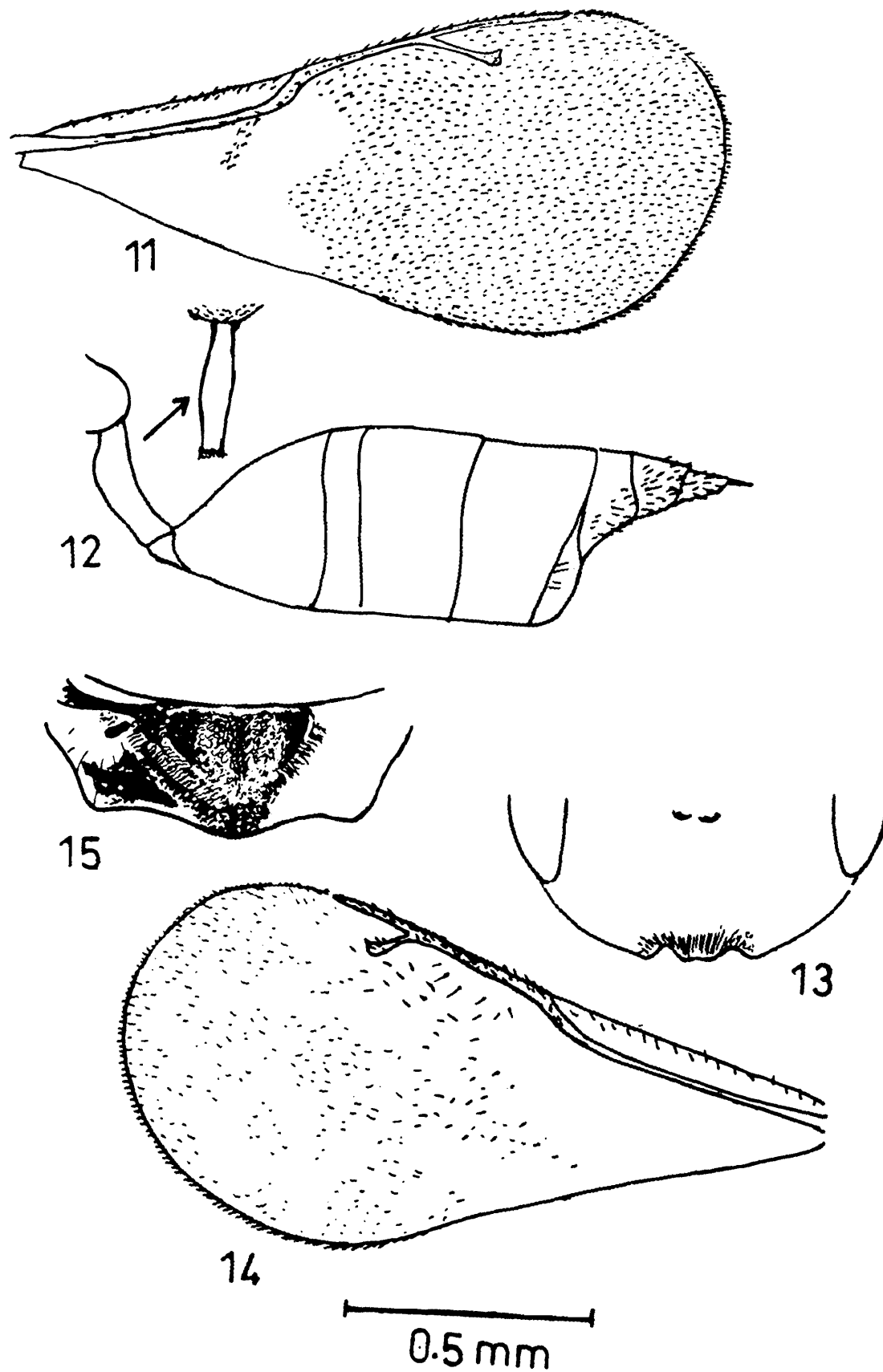
2. *Merismomorpha elongata*, sp. nov.

(Figs. 7-11)

Female Length 2.3mm. Head and mesosoma bluish black; gaster dark metallic blue, brown ventrally; petiole brownish black. Antennae brown with scape, pedicel and anelli pale. Coxae concolrous with mesosoma, remaining parts of legs testaceous with tips of tarsi brown. Tegulae brown; wings hyaline; veins pale brown.

Head : 1.2x as broad as mesosoma, moderately reticulate with moderately dense pubescence; reticulation fine on vertex and lower face, almost shiny on the convex median line of the lower face. in dorsal view head width 2.1x length and in front view width 1.3x height; temple length 0.7x eye length; POL little shorter than OOL (6.5 : 7); lower margin of clypeus (Fig. 9) angulate; malar space length 0.6x eye height; eyes separated by 1.6x their height; eye height 1.8x width. Antennae (Fig. 8) inserted distinctly above middle of face; scrobe deep; scape slender, reaching to upper margin of median ocellus, length 0.8x eye height; length of pedicel plus flagellum little shorter than head width; flagellum with long pubescence; pedicel as long as F1; third anellus as long as first and second combined; all funicular segments longer than wide; clava as long as 2.5 preceding segments combined.

Mesosoma : Length 1.3x width; moderately reticulate punctate with long white pubescence. Mesoscutum width 2.3x length; notauli complete. Scutellum medially little longer than mesoscutum; frenal line not indicated. Propodeum (Fig. 10) medially 0.8x as long as scutellum; median area moderately reticulate, lateral area finely reticulate; median carina indicated; submedian channels shallow, outer margins of them developed into a fine but distinct carina. Metapleuron almost shiny with a depression on upper and lower margins. Forewing (Fig. 11) length 2.3x width; basal part almost bare except three rows of hairs on basal vein; costal cell with upper part hairy. Relative lengths : SMV 22, MV 11.5, PMV 10, STV 5.



Figs. 11-15, 11. *Merismomorpha elongata* sp. nov. Female forewing. 12-15, *Merismomorpha truncata* sp. nov. Female : 12, gaster in profile (petiole also in dorsal view); 13, lower margin of clypeus; 14, forewing; 15, propodeum in dorsal view.

Gaster : Elongate, ovate; petiole as long as hind coxa. length 3.1x maximum width in profile, broadened before middle, embraced by a very short extension of first gastral sternite; gaster (excluding petiole) slightly longer than head and mesosoma combined (42 : 40) and 2.3x hind tibia; hind margins of T1 & T2 incised in the middle: T3 medially 2.4x T4.

Holotype : Female : INDIA : Kerala, Palghat district, Agali, 12.xii.1987, Coll. P. M. Sureshan.

Remarks : This species can be readily distinguished from the other two species as given in the key.

3. *Merismomorpha truncata*, sp. nov.

(Figs. 12-15)

Female Length 2.2mm. Head and mesosoma black; gaster brownish black with slight metallic blue reflection and brown basically. Antennae brown with lower part of scape pale. Coxae brownish black; femora and tibiae dark brown; tarsi pale brown with tips darker. Tegulae dark brown; wings hyaline; veins pale brown.

Head : 1.1x as wide as mesosoma, finely reticulate, pubescence small and inconspicuous. in dorsal view head width 2x length and in front view width 1.3x height; temple length 0.5x eye length; lower face not evidently convex along the median line; POL 1.3x OOL; lower margin of clypeus truncate; malar space length 0.7x eye height; eyes separated by 1.2x their height; eye height 1.6x width. Antennae inserted very little above middle of face; scape hardly reaching lower margin of median ocellus, length 0.7x eye height; other wise antennae similar as in *M. minuta*.

Mesosoma : Length 1.4x width; sculpture and pubescence as in *M. minuta*. Mesoscutum width 2.4x length; notauli complete. Scutellum medially little longer than mesoscutum; frenal line not indicated, reticulation shallower on frenal area. Propodeum (Fig. 15) medially 0.6x as long as scutellum; median area raised, finely reticulate, basal foveae broad and deep; submedian channels moderately deep. Forewing (Fig. 14) length 2x width; pubescence as in *M. minuta* except for few hairs below MV more distinct; basal hairline not indicated. Relative lengths SMV 23, MV 12.5, PMV 6.5, STV 3.

Gaster : (Fig. 12) elongate, ovate, dorsally slightly collapsing at the base; petiole as long as hind coxa, widened at the middle, embraced by a short extension of gastral sternite; petiole length 3x maximum width in profile; gaster (excluding petiole) as long as head plus mesosoma combined and 2.5x as long as hind tibia; hind margin of T1 & T2 almost entire; exposed part of T3 only little longer than T4 (10 : 9).

Holotype : Female : INDIA : Kerala, Malappuram district, Calicut University Campus, 3.v.1988, Coll. P. M. Sureshan.

Remarks : This species can be readily distinguished from other species in having lower margin of clypeus truncate, gaster with T3 little longer than T4, lower face not evidently convex along median line and propodeum with broad basal foveae.

SUMMARY

Three new species of *Merismomorpha* Girault viz., *M. minuta*, *M. elongata* and *M. truncata* are described from India. Diagnostic characters and affinities of *Merismomorpha* and a key to Indian species are provided.

ACKNOWLEDGEMENTS

I am grateful to the Director, Zoological Survey of India, Calcutta and the Officer-in-charge, Zoological Survey of India, Western Ghats Field Research Station, Calicut for providing necessary facilities and constant encouragement. I am grateful to Dr. Chris Burwell, Queensland Museum, Brisbane, Australia for arranging the loan of *M. acutiventris* and other specimens of *Merismomorpha*. My sincere thanks are due to Dr. T. C. Narendran, Professor, University of Calicut, Kerala for valuable suggestions.

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